

Map Projection Experiment

One of the toughest challenges of map making is to accurately project the spherical surface of the earth onto the flat surface of a map. In this activity, students will challenge themselves as they attempt their own projection.

Materials

Black and blue permanent markers
Inflated beach ball
Globe
Scissors
Cone shaped coffee filters
Thumbtacks
Foam core board, about 12" square
Drafting compass
Pencil
String
Black felt tip pen
Ruler

Instructions – if it is not possible for each student to have beach ball, students can observe this experiment as a teacher does the work.

1. Inflate your beach ball. With a permanent marker, draw the equator around the center of the beach ball. Mark the North and South Poles.
2. Use a globe for reference and draw approximate outlines of the continents on your ball. Mark the major oceans.
3. Deflate your ball and use scissors to cut from pole to pole (longitudinally) through the Pacific Ocean. Try to spread out your beach ball and see how difficult it is to accurately show the earth on a rectangular piece of paper.

More experimenting – try this conic projection

1. Tack a cone shaped coffee filter to a piece of foam core or tape it to a desk.
2. Use a drafting compass (easier to do on the foam core) and pencil to draw several lines of latitude on the filter, each $\frac{1}{4}$ " apart. Be sure to have a line at the top of the cone and one at the bottom.

Gerónimo de Chaves (1524– ?), *La Florida*

3. Use string to measure the length of the top arc and then the bottom arc – lay the string along the arc, mark the end point with a marker, and then measure the distances.
4. Divide both measurements by 20.
5. Use a pen to mark the distance of each of the 20 segments on each piece of string.
6. Lay the string back on the coffee filter at each arc and transfer the measurement points to the coffee filter.
7. Now use a ruler to help you draw lines from the marks on the top arc to the marks on the lower arc. The lines will approximate longitude. Now you have a projection.

